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Fujioka

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(54) **IMAGE FORMING APPARATUS CONFIGURATION FOR ELECTRIC CHARGE REMOVAL**

(71) Applicant: **Michio Fujioka**, Nagoya (JP)

(72) Inventor: **Michio Fujioka**, Nagoya (JP)

(73) Assignee: **Brother Kogyo Kabushiki Kaisha**, Nagoya-shi, Aichi-ken (JP)

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G03G 15/01 (2006.01)

(52) **U.S. Cl.**
USPC **399/90**; 399/303

(58) **Field of Classification Search**
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USPC 399/90, 303, 312
See application file for complete search history.

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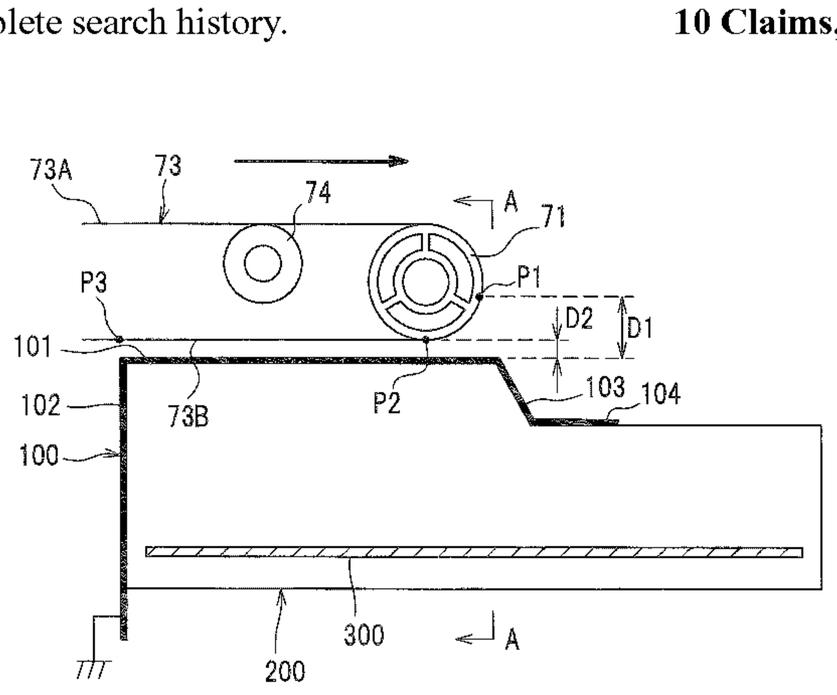
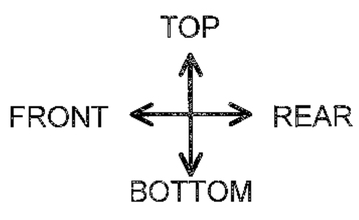
Primary Examiner — Robert Beatty
(74) *Attorney, Agent, or Firm* — Banner & Witcoff, Ltd.

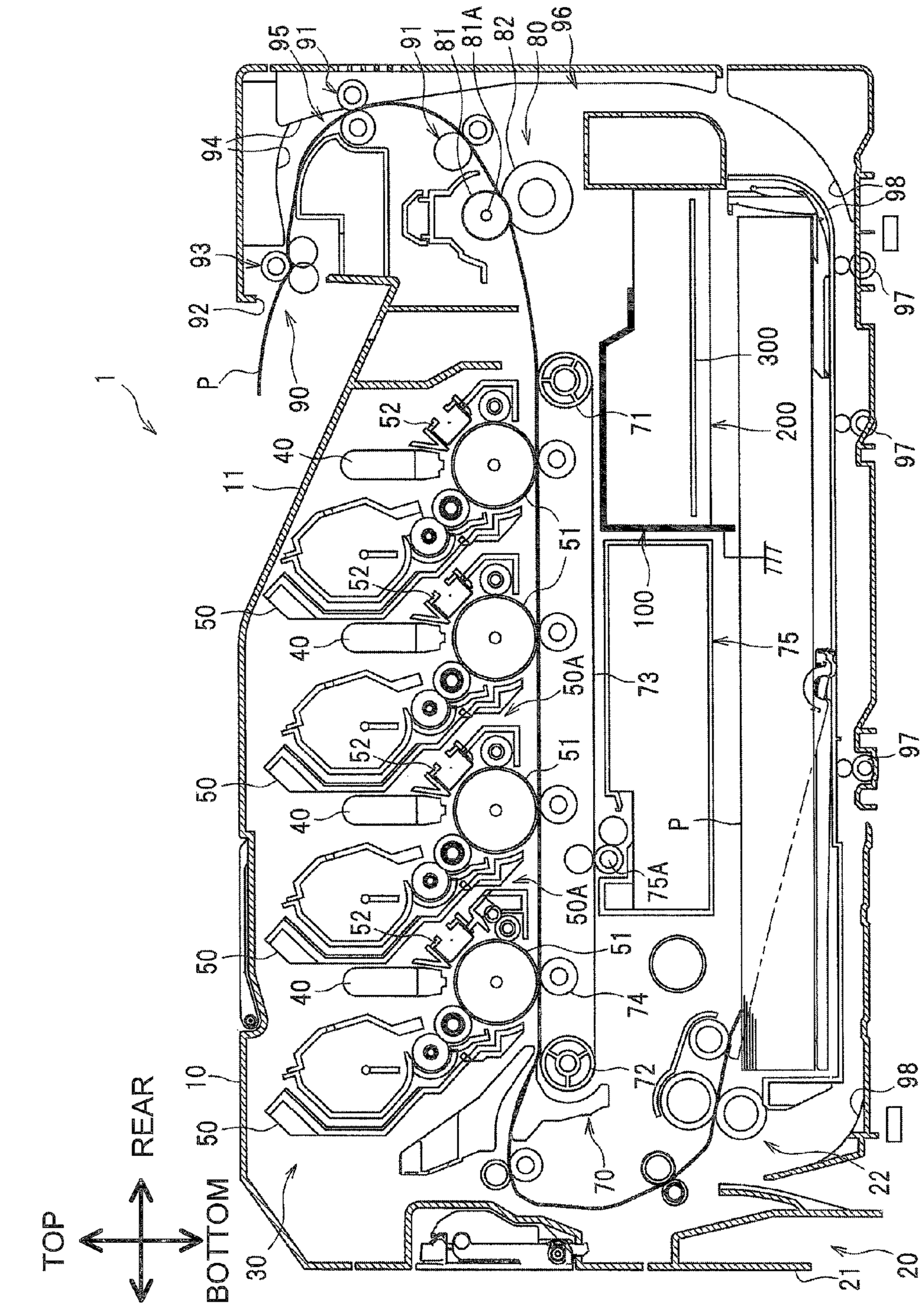
(57) **ABSTRACT**

An image forming apparatus includes a first roller and a second roller spaced apart from the first roller, a belt being endless and extending around the first roller and the second roller, a photosensitive member, a transfer member, and a conductor. The belt is configured to move in a moving direction. The belt has a first surface and a second surface. The first surface extends from the first roller to the second roller in the moving direction, and the second surface extends from the second roller to the first roller in the moving direction. The photosensitive member is disposed facing the first surface of the belt and configured to carry a developer image thereon. The transfer member is disposed facing toward the photosensitive member and configured to transfer the developer image on the photosensitive member. The conductor is electrically grounded and disposed facing the second surface of the belt.

10 Claims, 6 Drawing Sheets






TOP
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1
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73
74
75
75A
777
80
81
81A
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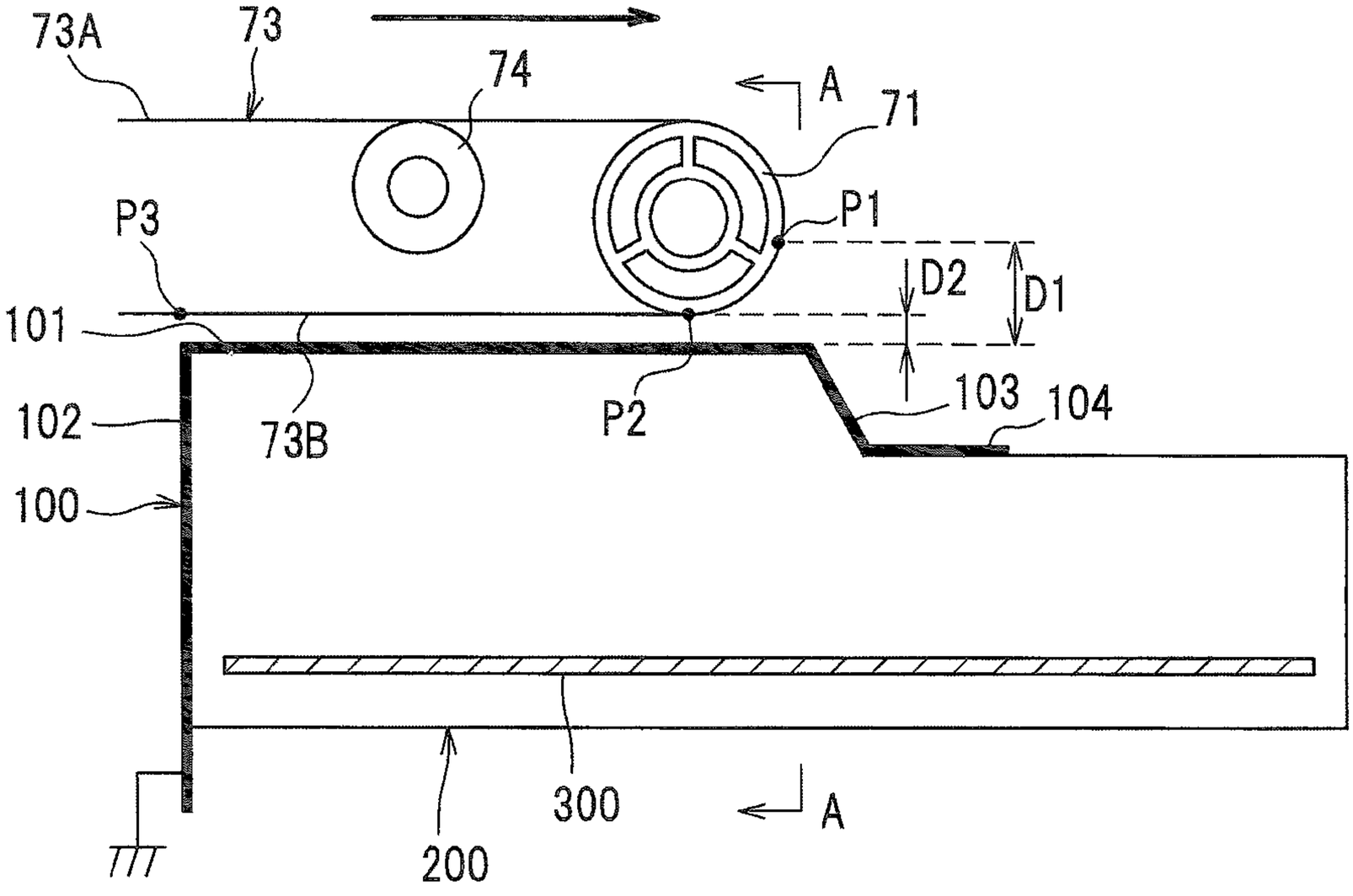
90
91
92
93
94
95
96
97
98
100
200
300
P

Fig. 1

Fig.2


73A
73
74
A
71
P3
P1
D2
D1
101
102
73B
P2
103
104
100
300
A
200

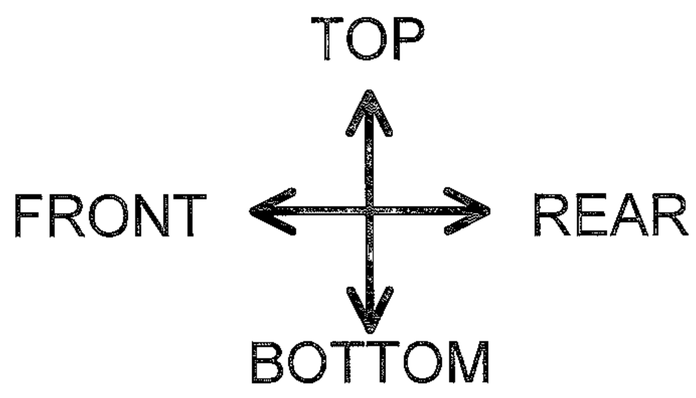

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Fig.3

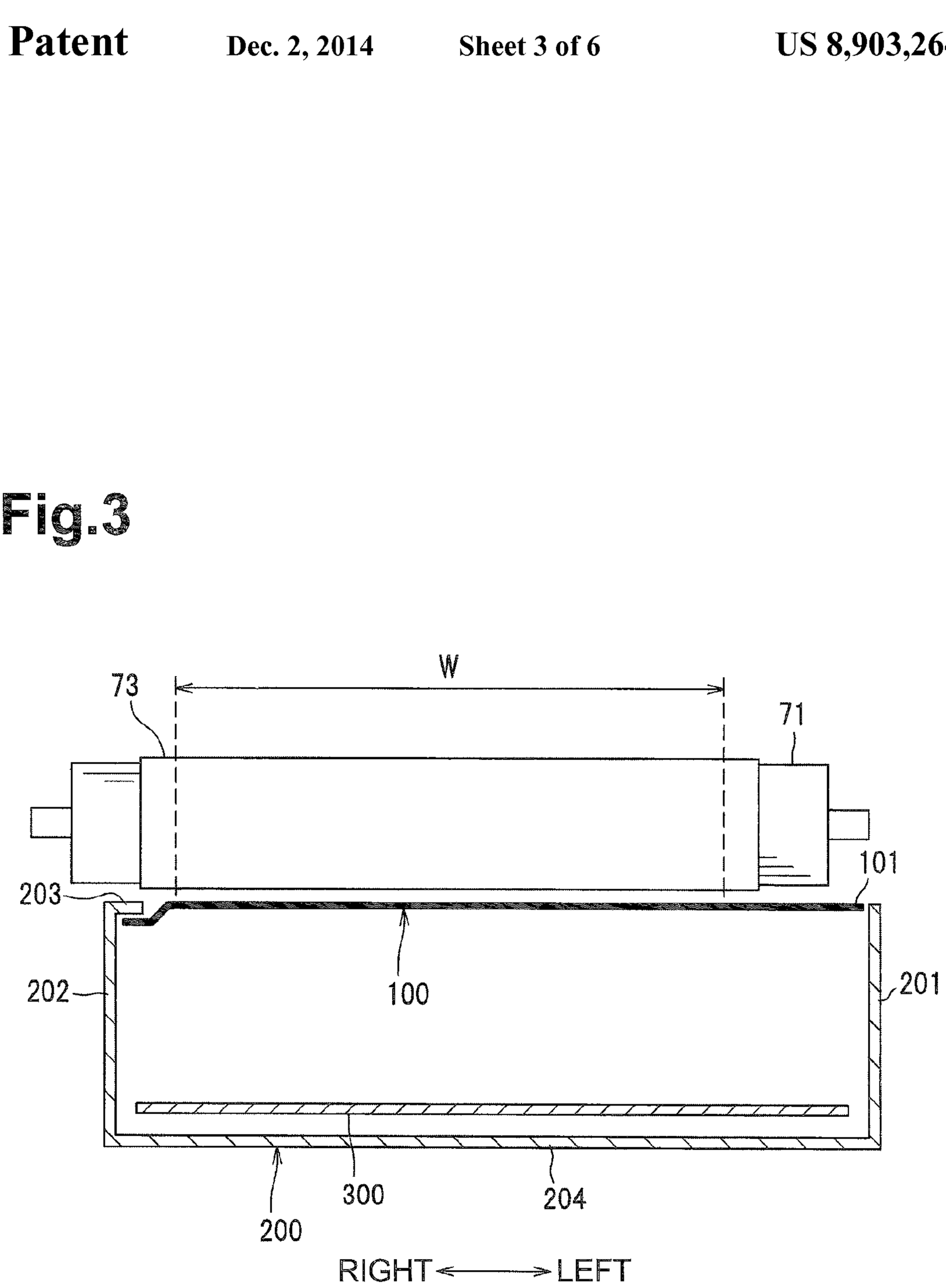


Fig.4A

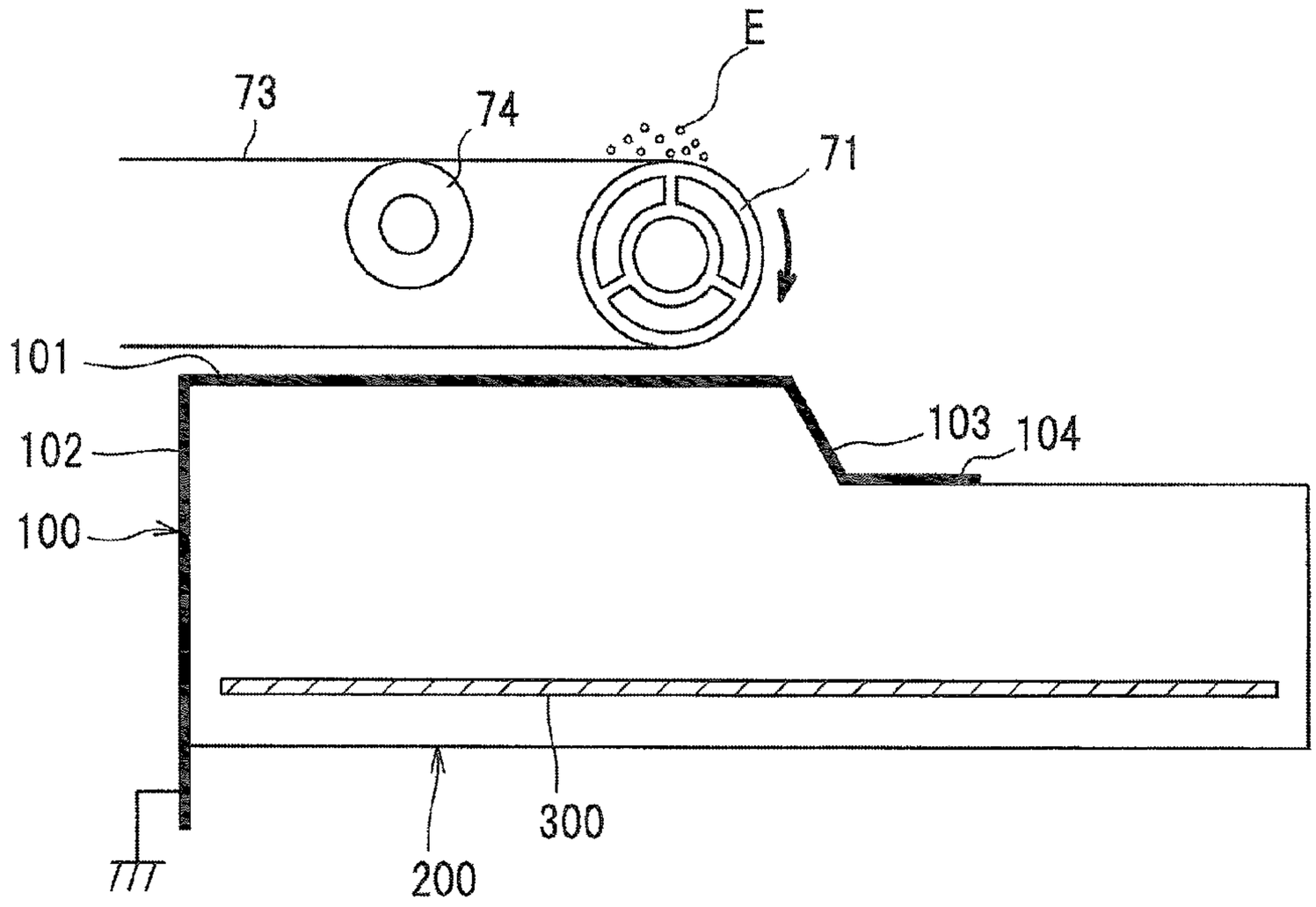
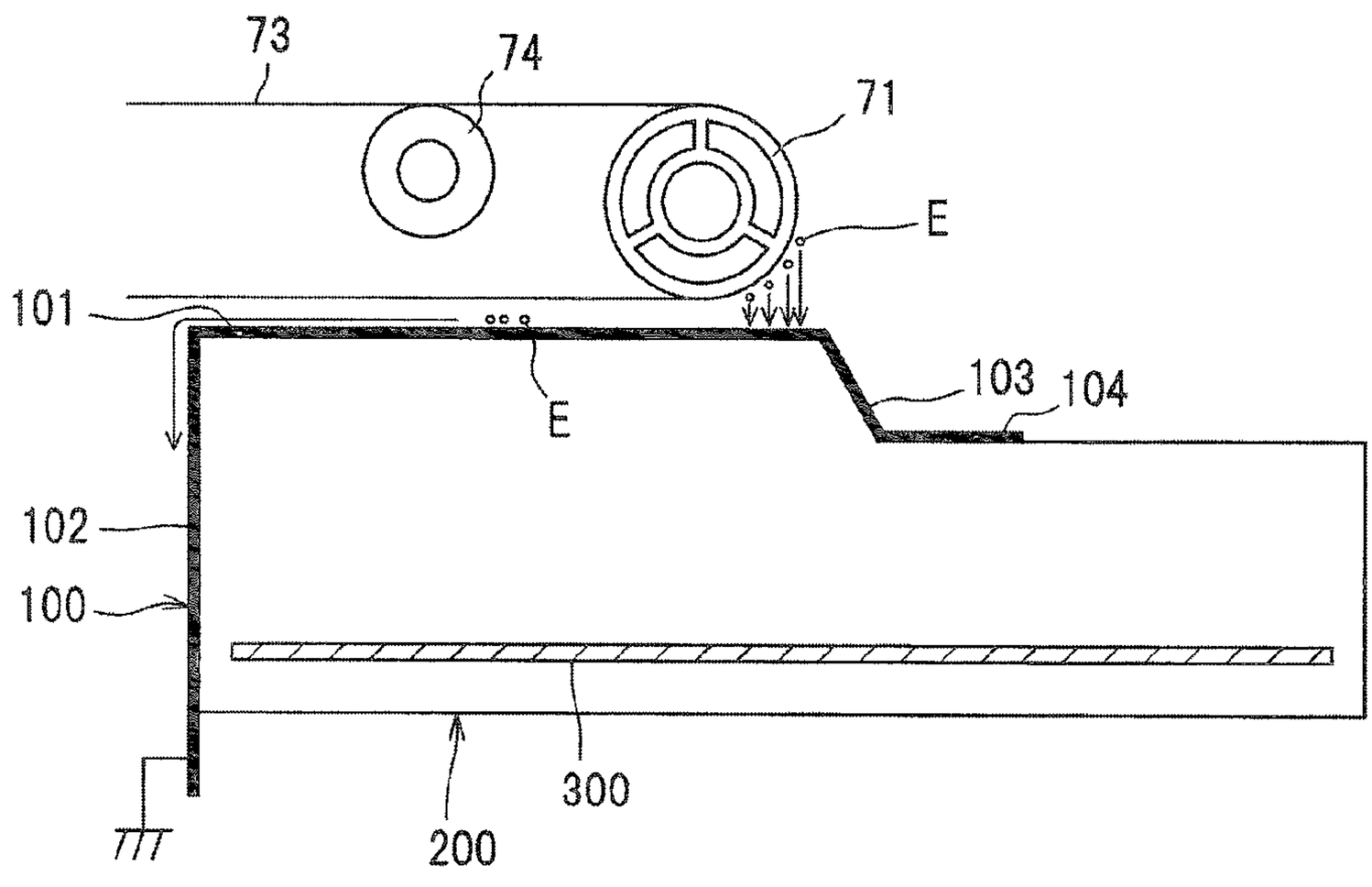

E
73
74
71
101
102
103
104
100
300
200

Fig.4B


73
74
71
E
101
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103
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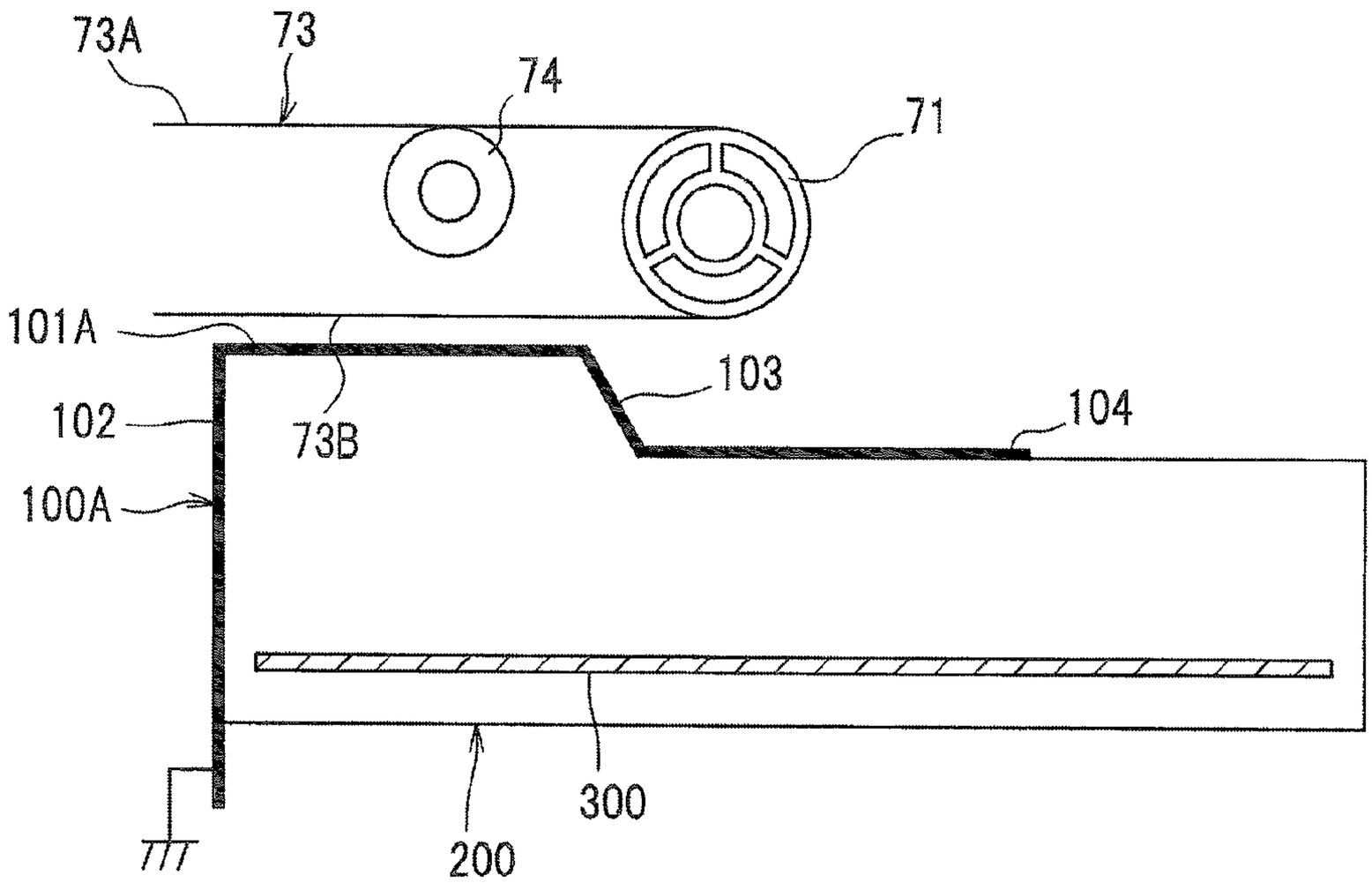
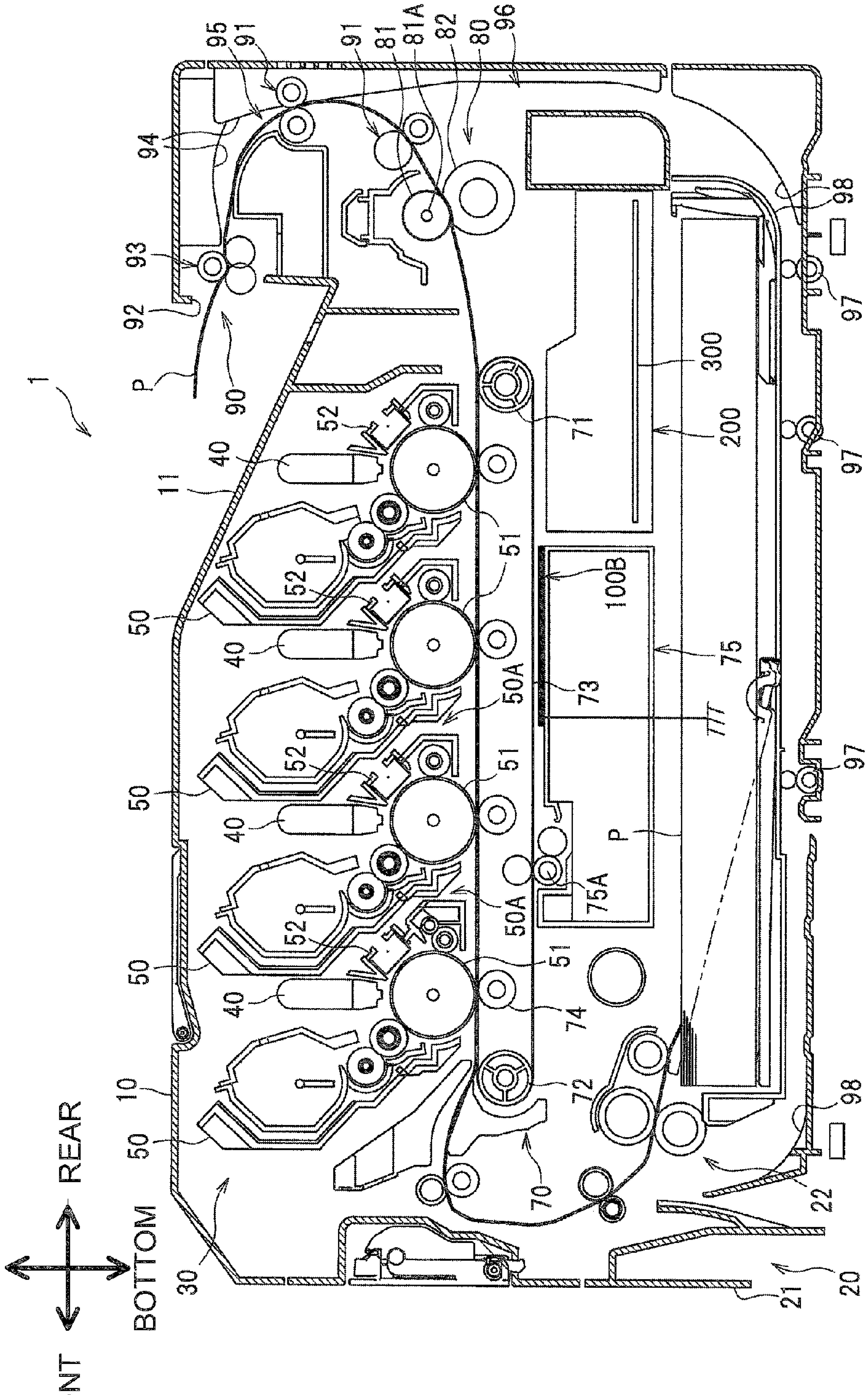
300
200

Fig.5




TOP
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74
75
75A
80
81
81A
82
90
91
92
93
94
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96
97
98
100B
200
300
P

Fig.6

IMAGE FORMING APPARATUS CONFIGURATION FOR ELECTRIC CHARGE REMOVAL

CROSS REFERENCE TO RELATED APPLICATION

This application claims priority from Japanese Patent Application No. 2012-146553, filed on Jun. 29, 2012, which is incorporated herein by reference in its entirety.

FIELD

Aspects of the disclosure relate to an image forming apparatus including a belt.

BACKGROUND

Generally, known electrophotographic image forming apparatuses include two types: a direct tandem type where toner images carried on photosensitive drums are directly transferred onto a sheet fed on a conveyor sheet; and an intermediate transfer type where toner images carried on photosensitive drums are transferred onto an intermediate transfer belt and then transferred from the intermediate transfer belt onto a sheet.

A known intermediate transfer type image forming apparatus is configured to form an image on a sheet by transferring a toner image formed on an intermediate transfer belt onto the sheet. During toner image transferring onto the sheet, electric charges may remain on a surface of the sheet. As the electric charges may cause undesired electrostatic discharge between the intermediate transfer belt and the sheet, a method for removing electric charges from a surface of a sheet has been proposed.

SUMMARY

According to a study of the inventor of the disclosure, it has been found that electric charges may remain also on a conveyor belt or an intermediate transfer belt, and cause electrostatic discharge when a sheet comes off from the belt. Due to the electrostatic discharge, a toner image not yet fixed on the sheet may result in a blurred image and the belt surface may be damaged, e.g., scratched.

Illustrative aspects of the disclosure provide an image forming apparatus configured to remove electric charges from a surface of a belt effectively.

According to an aspect of the disclosure, an image forming apparatus includes a first roller and a second roller spaced apart from the first roller, a belt being endless and extending around the first roller and the second roller, a photosensitive member, a transfer member, and a conductor. The belt is configured to move in a moving direction. The belt has a first surface and a second surface. The first surface extends from the first roller to the second roller in the moving direction, and the second surface extends from the second roller to the first roller in the moving direction. The photosensitive member is disposed facing the first surface of the belt and configured to carry a developer image thereon. The transfer member is disposed facing toward the photosensitive member and configured to transfer the developer image on the photosensitive member. The conductor is electrically grounded and disposed facing the second surface of the belt.

BRIEF DESCRIPTION OF THE DRAWINGS

Illustrative aspects will be described in detail with reference to the following figures in which like elements are labeled with like numbers and in which:

FIG. **1** is a sectional view of an illustrative image forming apparatus, e.g. a color LED printer, according to an embodiment of the disclosure;

FIG. **2** is an enlarged view of a conductor plate and its peripheral components;

FIG. **3** is a sectional view taken along the line A-A of FIG. **2**;

FIG. **4**A is an enlarged view of the conductor plate and its peripheral components before electric charges are removed from the conductor plate;

FIG. **4**B is an enlarged view of the conductor plate and its peripheral components while electric charges are removed from the conductor plate;

FIG. **5** is an enlarged view of a conductor plate and its peripheral components according to a first modification of the disclosure; and

FIG. **6** is a sectional view of a color LED printer including a conductor plate according to a second modification of the disclosure.

DETAILED DESCRIPTION

An illustrative embodiment will be described in detail with reference to the accompanying drawings. In the following description, a general structure of a color LED printer **1**, as an example of an image forming apparatus, will be described and then features of the disclosure will be described in detail.

In the following description, orientations or sides of the color LED printer **1** will be identified based on the color LED printer disposed in an orientation in which it is intended to be used. In other words, in FIG. **1**, the left side is referred to as the front or front side, the right side is referred to as the rear or the rear side, the up side is referred to as the top or upper side, and the down side is referred to as the bottom or lower side. The top-bottom direction may be referred to as a vertical direction.

As shown in FIG. **1**, the color LED printer **1** includes a main body **10**, a sheet feed portion **20** configured to feed a sheet P, as an example of a recording sheet, an image forming portion **30** configured to form an image on the sheet P fed thereto, and a sheet ejection portion **90** configured to eject the sheet P having the image formed thereon.

The sheet feed portion **20** is disposed below the image forming portion **30**, and includes a sheet tray **21** configured to accommodate sheets P therein, and a sheet feeding device **22** configured to feed a sheet P from the sheet tray **21** to the image forming portion **30**. In the sheet feed portion **20**, the sheet feeding device **22** feeds a sheet P from the sheet tray **21** to the image forming portion **30** in the shape of a letter U from the front side to the rear side.

The image forming portion **30** includes four LED units **40**, four process cartridges **50**, a transfer unit **70** and a fixing unit **80**.

Each of the LED units **40** includes a plurality of LEDs and is configured to irradiate a photosensitive drum **51** as an example of a photosensitive member.

The process cartridges **50** are arranged in the front-rear direction and each include a photosensitive drum **51**, a charger **52**, a known developing roller and a known toner chamber which are unnumbered.

The transfer unit **70** is disposed between the sheet feed portion **20** and each of the process cartridges **50**, and includes a drive roller **71** as an example of a first roller, a driven roller **72** as an example of a second roller, a conveyor belt **73** as an example of a belt, and transfer rollers **74** as an example of a transfer member.

The drive roller **71** and the driven roller **72** are spaced apart from and parallel to each other in the front-rear direction, and the conveyor belt **73**, which is an endless belt, is stretched therebetween. The drive roller **71** is located downstream relative to the photosensitive drums **51** in a moving direction of the conveyor belt **73**. The conveyor belt **73** contacts the photosensitive drums **51** at its outer surface. Inside the conveyor belt **73**, four transfer rollers **74** are disposed facing toward the photosensitive drums **51** such that the endless belt **73** is sandwiched between the transfer rollers **74** and the photosensitive drums **51**. During image transfer, the transfer rollers **74** are biased.

The conveyor belt **73** **10** is made of a resistive element, e.g., a nylon resin, having a volume resistivity ten to the power of eleven to thirteen (ohm-centimeter), and can prevent leakage of current from the transfer rollers **74**, which are disposed inside the conveyor belt **73**. Thus, electric charges are liable to build up on a surface of the conveyor belt **73**.

The transfer unit **70** is disposed above a cleaning unit **75** as an example of a cleaning member and a board container **200** including a conductor plate **100**, as an example of a conductor, disposed proximate to the conveyor belt **73**.

The cleaning unit **75** includes a cleaning roller **75**A and is configured to collect foreign matter adhering to the conveyor belt **73** such as toner and paper dust.

The cleaning roller **75**A is disposed in contact with the conveyor belt **73** and configured to remove foreign matter adhering to the conveyor belt **73** therefrom.

The board container **200** is disposed rearward of the cleaning unit **75** or upstream from the cleaning unit **75** in the moving direction of the conveyor belt **73** and accommodates a circuit board **300** inside.

The fixing unit **80** is disposed at the rear of the process cartridges **50** and the transfer unit **70**, and includes a heat roller **81** having a heat source, e.g., a halogen heater **81**A inside, and a pressure roller **82** disposed opposite to the heat roller **81** and configured to press the heat roller **81**A.

In the image forming portion **30** structured as described above, the surface of each photosensitive drum **51** is uniformly charged by a corresponding charger **52**, and subsequently exposed by a corresponding LED unit **40**. Thus, a potential in an exposed area of each photosensitive drum **51** drops, and an electrostatic latent image based on image data is formed on the surface of each photosensitive drum **51**. Then, the developing roller supplies toner to the electrostatic latent image formed on each photosensitive drum **51**, and a toner image is carried on the surface of each photosensitive drum **51**.

Then, when a sheet P is supplied onto the conveyor belt **73** and fed in between the photosensitive drum **51** and the transfer rollers **74**, the toner images carried on the surfaces of the photosensitive drums **51** are sequentially transferred onto the sheet P. The sheet P having the toner images transferred thereto passes between the heat roller **81** and the pressure roller **82** and the toner images transferred onto the sheet P are thermally fixed.

The sheet ejection portion **90** includes a feed roller **91**, an ejection roller **93**, and a guide **94**. The feed roller **91** is configured to feed a sheet P. The ejection roller **93** is configured to eject the sheet P from an ejection port **92** outside of the main body **10** (or to a sheet ejection tray **11**). The ejection port **92** is provided in the main body **10** such that it is open frontward above the fixing unit **80**. The guide **94** is configured to guide the sheet P from the fixing unit **80** toward the ejection port **92** in the shape of a letter U. The feed roller **91**, the ejection roller **93** and the guide **94** define a U-shaped sheet ejection path **95** through which the sheet P printed in the image forming portion **30** is guided outside of the main body **10**.

The sheet ejection path **95** is coupled to a re-feed path **96** for re-feeding the sheet P from the sheet ejection path **95** to an upstream side of the image forming portion **30** in the sheet feed direction to print the back side (e.g., a reverse side) of the sheet P. The re-feed path **96** is defined by multiple re-feed rollers **97** and a guide **98**.

In the sheet ejection portion **90**, during simplex printing, a sheet P having passed through the fixing unit **80** is fed in the sheet ejection path **95** frontward from the rear side in the U shape, and ejected via the ejection port **92** to the ejection tray **11** outside of the main body **10**. On the other hand, during duplex printing, after a sheet P whose single side has been printed is ejected halfway from the main body **10** by the ejection roller **93**, the ejection roller **93** rotates backward and the sheet P is delivered to the re-feed path **96** and re-fed to the upstream side of the image forming portion **30** with its front side and the back side reversed.

The following will describe a structure of the conductor plate **100**.

As shown in FIG. **2**, the conductor plate **100** has an electric charge removing surface **101**, a ground surface **102**, an inclined surface **103**, and a rear end surface **104**. These surfaces are located below the conveyor belt **73** and define an upper surface and a front surface of the board container **200**. The conductor plate **100** is made of a sheet of metal to shape the above surfaces by sheet metal working.

The electric charge removing surface **101** is disposed facing an extension surface **73**B, as an example of a second surface, of the conveyor belt **73** in parallel thereto. The extension surface **73**B is located downstream relative to the drive roller **71** in the moving direction, which is indicated by an arrow, of the conveyor belt **73**, and opposite to a sheet conveying surface **73**A, as an example of a first surface, of the conveyor belt **73** on which a sheet P is conveyed. The electric charge removing surface **101** extends frontward of the most downstream-side transfer roller **74** and is shaped to have a plate shape. In other words, the electric charge removing surface **101** faces the conveyor belt **73** widely.

The electric charge removing surface **101** and the conveyor belt **73** wound around the drive roller **71** are disposed such that a distance therebetween gets shorter at a downstream portion of the drive roller **71**, in the moving direction of the conveyor belt **73**, than at an upstream portion of the drive roller **71**. Specifically, the conveyor belt **73** starts to face the electric charge removing surface **101** from when coming to a position P**1** where a distance from the surface of the conveyor belt **73** to the electric charge removing surface **101** becomes D1. As the conveyor belt **73** moves along with an outer surface of the drive roller **71** toward the downstream side in the moving direction of the conveyor belt **73**, the surface of the conveyor belt **73** having come to the position P**1** gradually approaches the electric charge removing surface **101**, and reaches a position P**2** where the conveyor belt **73** comes closest to the electric charge removing surface **101** and the distance becomes D2. Thus, as the surface of the conveyor belt **73** approaches the electric charge removing surface **101** not suddenly but gradually, localized electric discharge can be prevented. D2 is in the range of 1 to 10 mm, specifically 2 to 4 mm.

The surface of the conveyor belt **73** having reached the position P**2** further moves to a position P**3** where the surface of the conveyor belt **73** approaches a front end portion of the electric charge removing surface **101**. A distance from the position P**2** to the position P**3** is fully longer than a distance

from the position P1 to the position P2, and thus the surface of the conveyor belt **73** is allowed to remain close to the electric charge removing surface **101** sufficiently for a long time. Thus, electric charges can be effectively removed.

The ground surface **102** constitutes a front surface of the board container **200**, and is shaped to extend from the front end portion of the electric charge removing surface **101** downward of the board container **200**. A lower end portion of the ground surface **102** is electrically grounded.

The inclined surface **103** is shaped such that it is inclined rearward and downward from a rear end portion of the electric charge removing surface **101** located rearward of the drive roller **71**.

The rear end surface **104** is shaped to extend slightly rearward from an end of the inclined surface **103** opposite to the electric charge removing surface **101**.

A structure of the conductor plate **100** in the vicinity of the drive roller **71** will be described.

The board container **200** is made of a metal plate. As shown in FIG. **3**, the board container **200** includes a left sidewall **201**, a right sidewall **202**, an upper wall **203** and a lower wall **201** in addition to the conductor plate **100**.

The left sidewall **201** is located leftward of a left end of the drive roller **71** (on the right side in FIG. **3**).

The right sidewall **202** is located in a position corresponding to a right end portion of the drive roller **71** (on the left side in FIG. **3**), and is connected to the upper wall **203**.

The upper wall **203** is shaped such that it is located outside of an image formation zone width W on the conveyor belt **73** or a width where a toner image is to be formed.

The electric charge removing surface **101** is disposed at a substantially same height as a surface of the upper wall **203** approximate to the drive roller **71**. A left end portion of the electric charge removing surface **101** extends leftward of the left end of the drive roller **71** and is disposed in proximity to the left sidewall **201** of the board container **200**. A right end portion of the electric charge removing surface **101** is disposed such that it seats below the upper wall **203** of the board container **200**. In other words, the electric charge removing surface **101** is disposed in the image formation zone width W of the conveyor belt **73**. As both left and right end portions of the electric charge removing surface **101** are disposed outside of the conveyor belt **73** in a width direction thereof, localized electric discharges at both end portions of the electric charge removing surface **101** can be prevented.

The following will describe electric charge removing operation.

As shown in FIG. **4**A, electric charges E built up on the surface of the conveyor belt **73** move along with the movement of the conveyor belt **73**.

As the conveyor belt **73** moves from the drive roller **71** toward the downstream side in the moving direction of the conveyor belt **73**, the electric charges E on the surface of the conveyor belt **73** gradually approach the electric charge removing surface **101** of the conductor plate **100**.

As shown in FIG. **4**B, as the surface of the conveyor belt **73** approaches the electric charge removing surface **101**, the electric charges E move from the surface of the conveyor belt **73** to the electric charge removing surface **101**, and are removed via the ground surface **102** electrically grounded. In this way, the electric charges E on the surface of the conveyor belt **73** are immediately removed.

The color LED printer **1** according to the embodiment is configured to remove electric charges from the surface of the conveyor belt **73** via the conductor plate **100**, because the conductor plate **100** is disposed in proximity to the surface of the conveyor belt **73** and is electrically grounded. With this structure, electric charges can be effectively removed from the surface of the conveyor belt **73**. Thus, a buildup of electric charges on the surface of the conveyor belt **73** can be reduced.

The conductor plate **100** faces the extension surface **73**B of the conveyor belt **73** different from the sheet conveying surface **73**A. In the direct tandem type, electric charges can be removed from the conveyor belt **73** quickly after a sheet P comes off from the conveyor belt **73**. In addition, similar effects can be obtained even when a sheet P, which is re-fed from the re-feed path **96** and is hard to absorb electric charges, comes off from the conveyor belt **73**. Thus, a buildup of the electric charges on the conveyor belt **73** can be effectively reduced.

The conveyor belt **73** and the electric charge removing surface **101** are configured such that the surface of the conveyor belt **73** gradually approaches the electric charge removing surface **101** as the conveyor belt **73** moves from the drive roller **71** toward the downstream side in the moving direction of the conveyor belt **73**. Thus, the surface of the conveyor belt **73** wound around the drive roller **71** does not suddenly approach the end portion of the electric charge removing surface **100**. This configuration can prevent an occurrence of a localized large electrostatic discharge.

The conductor plate **100** is disposed along the extension surface **73**B of the conveyor belt **73**, which extends downstream of the drive roller **71** in the moving direction of the conveyor belt **73**. As the conductor plate **100** is shaped to have a plate shape, the conductor plate **100** is disposed facing the conveyor belt **73** widely. Thus, electric charges can be effectively removed from the conveyor belt compared with a case where the conductor plate does not face the conveyor belt widely.

As the width of the conductor **100** is wider than the image formation zone width W on the surface of the conveyor belt **73**, the conductor plate **100** can be disposed in a range on the conveyor belt **73** corresponding to the image formation zone. Thus, electric charges can be effectively removed from the range corresponding to the image formation zone.

The conductor plate **100** constitutes a part of the board container **200**, and thus the conductor plate **100** being grounded can be used for reducing noise from the circuit board **300** as well as for removing electric charges from the conveyor belt **73**. Thus, compared with a structure where the conductor plate is used alone, the need to increase the manufacturing cost and the physical size of the color LED printer **1** can be obviated.

As the conductor plate **100** is disposed upstream of the cleaning roller **75**A in the moving direction of the conveyor belt **73**, electric charges can be removed from the conveyor belt **73** before the cleaning roller **75**A cleans the conveyor belt **73**. Thus, the cleaning roller **75**A is likely to be insensitive to electric charges and effective cleaning can be obtained.

The above embodiment shows, but is not limited to, that the color LED printer **1** is of a direct tandem type. For example, the embodiment may be applied to an intermediate transfer type image forming apparatus, which includes an endless intermediate transfer belt, a pair of rollers around which the intermediate transfer belt extends, and a transfer member, which is disposed opposite to a photosensitive member on which a developer image is to be formed and configured to transfer the developer image on the photosensitive member to the intermediate transfer belt. According to this structure, the conductor plate may be disposed in proximity to the intermediate transfer belt and be electrically grounded, and effects similar to those brought about by the embodiment can be appreciated. The above embodiment shows, but is not limited

to, that the belt extends around two rollers. The belt may extend around three or more rollers.

The above embodiment shows, but is not limited to, that the conductor plate **100** is disposed in a range corresponding to the image formation zone width W of the conveyor belt **73**. A conductor plate having a width wider than that of the conductor belt **73** may be disposed. According to this structure, the conductor plate can be disposed over all width of the conveyor belt **73** and thus electric charges can be effectively removed from the conveyor belt **73**.

The above embodiment shows, but is not limited to, that the conveyor belt **73** is disposed such that the surface of the conveyor belt **73** wound around the drive roller **71** gradually approaches the electric charge removing surface **101** as the conveyor belt **73** moves from the drive roller **71** toward the downstream side in the moving direction of the conveyor belt **73**. As shown in FIG. **5**, an electric charge removing surface **100**A may be disposed such that the extension surface **73**B of the conveyor belt **73** approaches the electric charge removing surface **101**A in a position where the electric charge removing surface **101**A does not overlap the drive roller **71** as viewed from a top-bottom direction.

The above embodiment shows, but is not limited to, that the conductor plate **100** constitutes a part of the board container **200**. The conductor plate **100** may be provided as an independent component or constitute a part of a member except for the board container.

The above embodiment shows, but is not limited to, that the conductor plate **100** includes the electric charge removing surface **101**, the ground surface **102**, the inclined surface **103**, and the rear end surface **104**. The conductor plate may have any shape such that it may only have an electric charge removing surface, which is grounded.

The above embodiment shows, but is not limited to, that the conductor plate **100** is disposed upstream of the cleaning unit **75** in the moving direction of the conveyor belt **73**. As shown in FIG. **6**, for example, a conductor plate **100**B, which is electrically grounded, may be disposed in the cleaning unit **75** such that the conductor plate **100**B faces the surface of the conveyor belt **73**.

The above embodiment shows, but is not limited to, the color LED printer **1** as an electrophotographic image forming apparatus according to aspects of the disclosure. The image forming apparatus may include an exposure device using a laser scanner. The image forming apparatus may include a copier, a multifunction apparatus and other apparatus.

While the features herein have been described in connection with various example structures and illustrative aspects, it will be understood by those skilled in the art that other variations and modifications of the structures and aspects described above may be made without departing from the scope of the inventions described herein. Other structures and aspects will be apparent to those skilled in the art from a consideration of the specification or practice of the features disclosed herein. It is intended that the specification and the described examples only are illustrative with the true scope of the inventions being defined by the following claims.

What is claimed is:

1. An image forming apparatus comprising:

a first roller and a second roller spaced apart from the first roller;

a belt being endless and extending around the first roller and the second roller, the belt being configured to move in a moving direction, the belt having a first surface and a second surface, the first surface extending from the first roller to the second roller in the moving direction, the second surface extending from the second roller to the first roller in the moving direction;

a photosensitive member disposed facing the first surface of the belt and configured to carry a developer image thereon;

a transfer member disposed facing toward the photosensitive member and configured to transfer the developer image on the photosensitive member; and

a conductor electrically grounded and disposed facing the second surface of the belt and facing toward the second roller,

wherein the conductor and the belt extending around the second roller are disposed with a distance therebetween that is shorter at a downstream portion of the second roller in the moving direction of the belt than at an upstream portion of the second roller.

2. The image forming apparatus according to claim **1**, wherein the conductor is disposed along the second surface of the belt and has a plate shape.

3. The image forming apparatus according to claim **1**, wherein the conductor has a width wider than a width of an image forming zone on the belt.

4. The image forming apparatus according to claim **1**, wherein the belt is configured to feed a recording sheet on the first surface.

5. The image forming apparatus according to claim **4**, further comprising:

a fixing unit configured to thermally fix the developer image transferred from the photosensitive member onto the recording sheet; and

a re-feeding mechanism configured to feed the recording sheet having passed through the fixing unit again to the photosensitive member.

6. The image forming apparatus according to claim **1**, further comprising a cleaning member configured to remove residue of the developer image from the belt,

wherein the conductor is disposed upstream of the cleaning member in the moving direction of the belt.

7. The image forming apparatus according to claim **1**, wherein the transfer member is configured to transfer the developer image on the photosensitive member to a recording sheet.

8. The image forming apparatus according to claim **1**, wherein the belt is disposed such that the first surface is parallel to the second surface.

9. An image forming apparatus comprising:

a first roller and a second roller spaced apart from the first roller;

a belt being endless and extending around the first roller and the second roller, the belt being configured to move in a moving direction, the belt having a first surface and a second surface, the first surface extending from the first roller to the second roller in the moving direction, the second surface extending from the second roller to the first roller in the moving direction;

a photosensitive member disposed facing the first surface of the belt and configured to carry a developer image thereon;

a transfer member disposed facing toward the photosensitive member and configured to transfer the developer image on the photosensitive member;

a conductor electrically grounded and disposed facing the second surface of the belt;

a circuit board; and

a board container configured to accommodate the circuit board therein, the board container including the conductor.

10. An image forming apparatus comprising:

a first roller and a second roller spaced apart from the first roller;

a belt being endless and extending around the first roller and the second roller, the belt being configured to move in a moving direction, the belt having a first surface and a second surface, the first surface extending from the first roller to the second roller in the moving direction, the second surface extending from the second roller to the first roller in the moving direction;

a photosensitive member disposed facing the first surface of the belt and configured to carry a developer image thereon;

a transfer member disposed facing toward the photosensitive member and configured to transfer the developer image on the photosensitive member;

a conductor electrically grounded and disposed facing the second surface of the belt; and

a cleaning member configured to remove a-residue of the developer image from the belt,

wherein the cleaning member includes the conductor on an upstream side in the moving direction of the belt.

* * * * *

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO. : 8,903,264 B2
APPLICATION NO. : 13/836194
DATED : December 2, 2014
INVENTOR(S) : Michio Fujioka

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In the claims

In Column 9, Claim 10, Line 19
Please delete “a-residue” and insert --residue--

Signed and Sealed this
Twenty-seventh Day of December, 2016

Michelle K. Lee

Michelle K. Lee
Director of the United States Patent and Trademark Office